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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,288	11/01/2000	Edward Kantorovich	10396/46201	4849

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KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
JAWORSKI, FRANCIS J	

ART UNIT	PAPER NUMBER
3737	11

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 39/623,288	Applicant(s) KANTOROVICH ET AL.	
	Examiner Jaworski Francis J.	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27 and 28* is/are allowed.

6)☒ Claim(s) *1-26 and 29-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims grouped into Inventions II and III in restriction paper No. 6 have been re-joined for prosecution in this case insofar as all base claims have been amended to include the common inventive feature as detailed on page 9 of the response paper No. 10 filed 2-4-04 such that the restriction if adhered to would no longer be proper. Accordingly, all of claims 1 - 37 are present for examination.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims in this application have been found to conflict with claims in patent No. US6,221,019 commonly assigned at the time of applicant's invention. (Parenthesized claims represent the application claim being addressed).

Claims 1-4, 7-26, 29-37 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent No.6221019 Although the conflicting claims are not identical, they are not patentably

distinct from each other because Claim 87 of the patent effectively represents a broadened scope with respect to applicant's claim 1 insofar as it pertains to an acoustic velocity measurement of any solid underlying biological tissue, the solid having a surface along which the (second) acoustic velocity can be measured by using simultaneous equations based upon determined travel times for at least three ultrasound path measurements. Claim 21 of the patent specifically claims the solid for which transit time measurement is had as bone. (Claims1, 24).

The claim 87 claims at least one transmitter and at least one receiver transducer thereby embracing one of each type; claims 49-51 claim various numbers of each in association with such multiple transit time measurements, and patent claim 27 specifically claims that multiple transit time measurements may be made simultaneously (Claims 2-3, 29-32, 37).

While claim 87 does not specifically teach maintaining a substantially unchanged average transmitted or detected frequency throughout measurement, it would have been inherently obvious to do so since different emission frequencies have different attenuation in biological media such that a non-constant measurement frequency would confound measurements of transit times for example. (Claims 4, 7)

Since the patent's claims 8 and18 make clear that in the three transmission travel time determination case plural of the measurements are enacted by directing the ultrasound at the same (bone) surface location under the intervening tissue, it would be inherently obvious that at least some path overlap occurs and that at least some non-

overlap must also occur in order that the measurements not be redundant (Claims 8-17).

Since the patent's claim 20 and claim 87 while they do not specifically claim soft tissue velocity determination they nonetheless make clear that the simultaneous equations are solving for acoustic velocity in bone relative to multiple transit time measurements of the ultrasound through the bone as well as overlying tissue it would necessarily follow that the soft tissue velocity must be determined either by measurement or estimation in order that bone acoustic velocity be isolated in the solution.(Claim 18).

Since claim 87 claims at least three (meaning three or more) ultrasound transmissions along differing travel paths for travel time measurement this would render inherently obvious a fourth such differing path.(Claim 19).

Claims 11-15 and 57-59 of the patent address the parallel or non-parallel features of the geometric projection or outer surfaces. (Claims 20-21, 23)

The patent's base claims embrace the two transducer case, in which circumstance there are insufficient locations to define co-planarity/non-coplanarity whereas claim 51 is generic to both cases. (Claims 22, 33, 34)

Patent claims 23 and 91 pertain to deriving maps of velocities for the hard tissue being studied along the direction of transmission. (Claims 25-26).

Since claims 11 and 14 of the patent allow for rocking the transducer set while maintaining coupling and for inclination angles known to have a relationship t9bone0 surface velocity it would have been inherently obvious to have preservation of skin

contact with the inclined transducers in order that back-reflection and attenuation through air not negate the measurements. (Claims 35-36).

Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent No.6221019 in view of Prratt, Jr. et al. Whereas the patent for example in claim 87 does not claim multiple frequency emission, it would have been obvious in view of Pratt, Jr. et al col. 14 line 43 – col. 15 line 62 to perform multiple simultaneous single-frequency measurements of transit time in order to eliminate (or utilize) arrival time dependency upon frequency.

Claim 6 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 87 of U.S. Patent No. 6221019 in view of Wilson et al (US4442713. Whereas the patent does not claim a different detected frequency it would have been obvious in view of Wilson et al Fig. 2 that since higher frequencies in a bandwidth of a transmitted pulse attenuate more then the center frequency of the pulse effectively downshifts in transit such that centering detection on a slightly lower center frequency would have been obvious over the patent's claim 87.

Allowable Subject Matter

Claims 27 -28 are allowed insofar as whereas patent claim 84 makes provision that measurement locations may be non-parallel effectively to the (bone) surface, no claiming is made soas to render obvious the incorporation of inclination angle as a defined relationship produced by simultaneous equation solution of unknowns.

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 703-308-3061.

FJJ:fjj

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Francis J. Jaworski
Primary Examiner